

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Canceled)
2. (Currently Amended) ~~The catalyst of claim 1, which is a supported catalyst in which KMgPO_4 is supported on a carrier~~ A catalyst for hydrocarbon steam cracking, which comprises a supported KMgPO_4 catalyst, wherein the KMgPO_4 supported catalyst is obtained by supporting KMgPO_4 on a carrier.
3. (Original) The catalyst of claim 2, wherein the carrier is selected from the group consisting of alpha-alumina, silica, silica-alumina, zirconium oxide, magnesium oxide, magnesium aluminate, calcium aluminate, and zeolite.
4. (Original) The catalyst of claim 2, wherein a content of KMgPO_4 in the supported catalyst is in a range of 0.5-30 wt %, based on the total weight of the supported catalyst.
5. (Original) The catalyst of claim 2, wherein KMgPO_4 is derived from a KMgPO_4 precursor prepared from magnesium nitrate hydrate, potassium hydroxide, and ammonium phosphate.
6. (Original) A method for preparing a catalyst for hydrocarbon steam cracking, which comprises: dissolving a KMgPO_4 precursor in water to prepare an aqueous solution of the KMgPO_4 precursor; and impregnating a carrier with the aqueous solution of the KMgPO_4 precursor to prepare a supported catalyst.
7. (Original) The method of claim 6, further comprising sintering the supported catalyst.

8. (Original) The method of claim 7, wherein the sintering is carried out at 1,000-1,400°C for 22-26 hours.

9. (Original) The method of claim 6, wherein the KMgPO_4 precursor is prepared from magnesium nitrate hydrate, potassium hydroxide, and ammonium phosphate.

10. (Original) The method of claim 6, wherein the carrier is selected from the group consisting of alpha-alumina, silica, silica-alumina, zirconium oxide, magnesium oxide, magnesium aluminate, calcium aluminate, and zeolite.

11. (Currently Amended) ~~The catalyst of claim 1, which is a sintered catalyst obtained by sintering a KMgPO_4 powder or a KMgPO_4 precursor powder and metal oxide~~
A catalyst for hydrocarbon steam cracking, which comprises a sintered KMgPO_4 catalyst, wherein the KMgPO_4 sintered catalyst is obtained by sintering a KMgPO_4 powder or a KMgPO_4 precursor powder and a metal oxide.

12. (Original) The catalyst of claim 11, wherein a content of KMgPO_4 in the sintered catalyst is in a range of 0.5-50 wt %, based on the total weight of the sintered catalyst.

13. (Original) The catalyst of claim 11, wherein the metal oxide is selected from the group consisting of alpha-alumina, silica, silica-alumina, zirconium oxide, magnesium oxide, magnesium aluminate, calcium aluminate, and zeolite.

14. (Original) The catalyst of claim 11, wherein the KMgPO_4 precursor is prepared from magnesium nitrate hydrate, potassium hydroxide, and ammonium phosphate.

15. (Original) A method for preparing a catalyst for hydrocarbon steam cracking, which comprises:
mixing a KMgPO_4 powder or a KMgPO_4 precursor powder and metal oxide; and

sintering the resultant mixture to obtain a sintered catalyst of KMgPO_4 -metal oxide.

16. (Original) The method of claim 15, wherein the sintering is carried out at 1,000-1,400°C for 22-26 hours.

17. (Original) The method of claim 15, wherein the metal oxide is selected from the group consisting of alpha-alumina, silica, silica-alumina, zirconium oxide, magnesium oxide, magnesium aluminate, calcium aluminate, and zeolite.

18. (Currently Amended) A method for producing olefins by steam cracking of hydrocarbons in the presence of ~~the catalyst selected from the group consisting of a catalyst comprising KMgSO_4 as a catalytic component, a supported catalyst and a sintered catalyst~~ the supported KMgPO_4 defined in claim 2 or the sintered KMgPO_4 defined in claim 11.

19. (Original) The method of claim 18, wherein the steam cracking is carried out at a reaction temperature of 600-1,000°C, a weight ratio of steam/hydrocarbons of 0.3-1.0, and LHSV (Liquid Hourly Space Velocity) of 1-20 hr^{-1} .

20. (Original) The method of claim 18, wherein the steam cracking is carried out in a reactor selected from the group consisting of a fixed-bed reactor, a fluidized-bed reactor, and a mobile phase reactor.

21. (Original) The method of claim 18, wherein the catalyst is regenerated by removal of cokes formed on a surface of the catalyst at 500-1,300°C in the presence of air, steam, or a mixture thereof after the steam cracking.